Module 4

Addressing Lead-Based Paint Hazards During Renovation, Remodeling, and Rehabilitation in Federally Owned and Assisted Housing

Module 4 Instructor Notes

Slide 4-1: Module 4 Safe Work Practices

- This is the module title slide.

Module 4
Safe Work Practices

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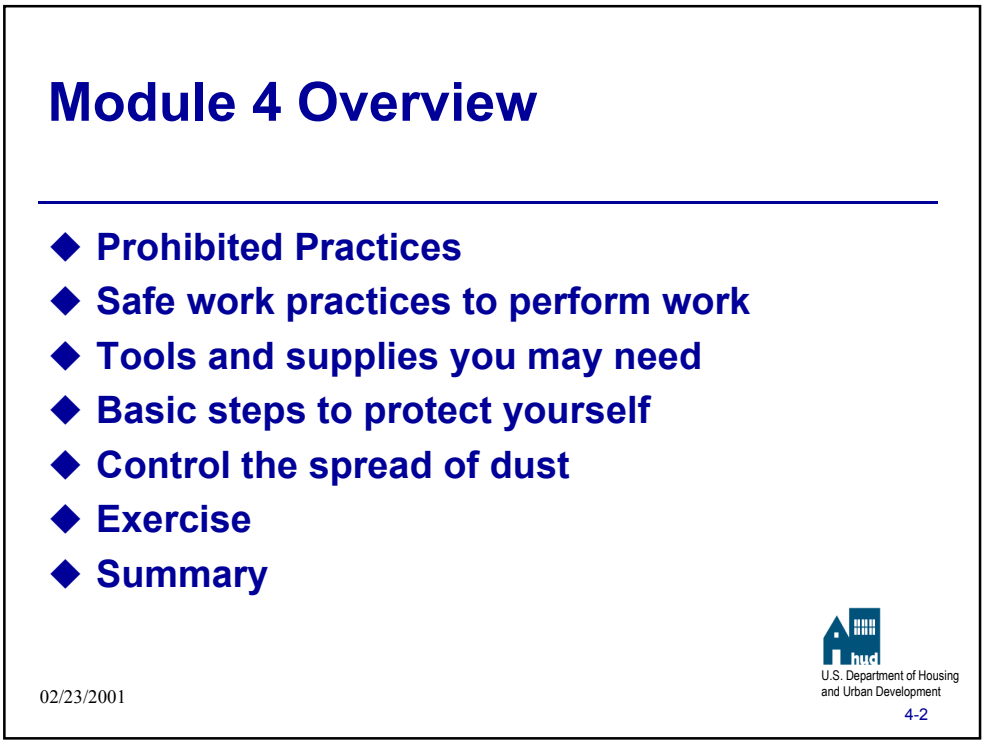
and Urban Development

Module 4 Instructor Notes

Slide 4-2: Module 4 Overview

- This module presents the second of the three major steps to lead safety. Set-up was the first and cleanup, the third, is covered in the next module.
- This module covers the bulleted list of topics on the slide. Review this list with the class participants.
- **Module objective:** The purpose of this module is to teach safe work practices and how to apply them on the job.
- Mention that you will first explain what safe work practices are and then have a discussion where the participants can think about how they can apply safe work practices on the job.



Role of safe work practices

- In addition to proper set-up at the start of a job and cleanup at the end of the job, the third key strategy to minimize the spread of dust is using safe work practices.

Upon completion of this module, you will know

- What work practices are prohibited because they create dangerous amounts of dust and paint chips.
- What safe work practices to use to reduce and control dust and paint chips.
- What tools you will need.
- How to apply safe work practices to common renovation, remodeling, and rehabilitation jobs.

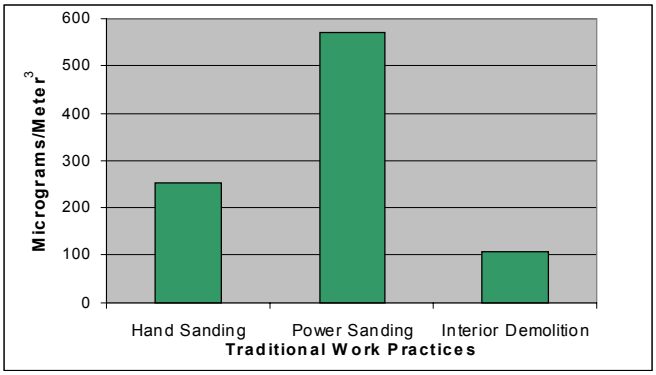
Slide 4-3: Typical Lead Dust Creation

- This chart illustrates that traditional work practices create large amounts of dust. Point out that the chart shows amounts of dust in the air measured for three common work practices. This chart may suggest different dust levels from those in the exercise about levels of dust created by different practices in Module 1.

- The source of the data for this chart is a study that measured amounts of leaded dust in the air caused by each type of work. Airborne dust was measured in micrograms per cubic meter ($\mu g/m^3$). Remind students that airborne dust falls out of the air and becomes settled dust.

- Although the chart does not indicate this, the amount of dust created by power and hand sanding and demolition is much larger than the amount of airborne leaded dust that requires special worker protection measures under OSHA regulations. Remind class of the requirements for worker protection as discussed in Module 1.

Typical Lead Dust Creation



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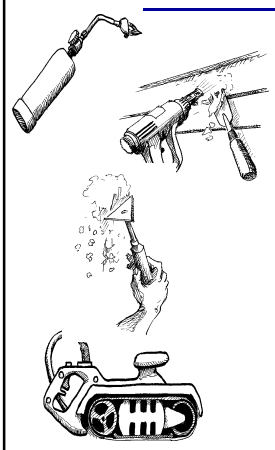
Traditional work practices may create large amounts of dust

- This chart shows amounts of airborne lead dust created by three common construction practices: hand sanding, power sanding, and interior demolition. Note all airborne dust eventually becomes settled dust.
- The amount of lead dust for each practice is significantly higher than the level where worker protection, such as respirators and protective clothing, is required by OSHA. This airborne dust is hard to control.
- By using safe work practices, you can control and significantly reduce the amount of dust created on the job. Controlling lead dust at the source of generation is important because dust generated into the air will eventually become settled dust on the ground. Later in this chapter, you will learn safe work practices that can replace these prohibited work practices.
- The data used in the chart above are from *Lead Exposure Associated with Renovation and Remodeling Activities: Summary Report*, Prepared by Battelle for the U.S. Environmental Protection Agency, May 1997, EPA 747-R-96-005.
- Conduct initial exposure assessment as required by OSHA lead construction standard. Information on conducting initial exposure assessments can be found in Appendix 6 or on the world-wide-web at www.osha.gov.

Slide 4-4: Practices Prohibited by HUD in Federally Owned and Assisted Housing

- This slide lists the practices that are known to create large amounts of dust and create exposure risks for occupants and workers. Several of these practices are also prohibited by HUD regulations. HUD prohibits use of these practices in federally- owned and federally assisted housing. These practices are:
    - Open flame burning or torching
    - Machine sanding, grinding, abrasive blasting, or sandblasting without HEPA exhaust
    - Heat gun paint removal above 1,100 degrees F*
    - Extensive dry scraping and dry sanding
    - Paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance (paint strippers may be used in historical restorations)
- See Appendix "Summary of U.S. Department of Housing and Urban Development (HUD) Requirements for Safe Work Practices" for more information about HUD requirements
- Check State requirements for lower threshold of heat gun.

Practices Prohibited by HUD in Federally Owned and Assisted Housing



- Open flame burning or torching
- Machine sanding, grinding, abrasive blasting, or sandblasting without HEPA exhaust
- Heat gun above 1,100 degrees Fahrenheit
- Extensive dry scraping and dry sanding
- Paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance

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Do not use these traditional work practices:

- A key to minimizing the spread of dust and paint chips is to not use certain traditional work practices known to create large amounts of dust and debris.
  - **Open flame burning or torching of paint and using a heat gun above 1,100º F** create fumes that are dangerous for workers to breathe. Small lead particles created by burning and heating also settle on surrounding surfaces and are very hard to clean up.
  - **Machine sanding, grinding, abrasive blasting**, **or sandblasting without HEPA exhaust** even on a small surface, creates a large amount of leaded dust that floats in the air and then settles on surfaces inside and outside the work area.
  - **Heat gun above 1,100 degrees Fahrenheit** may generate lead fumes which are an inhalation hazard.
  - **Extensive dry hand sanding and hand scraping** can also create large amounts of dust and paint chips.
  - **Paint stripping** is not a common work practice during most types of renovation and remodeling activities.

- See pages 9-10 in the *Lead Paint Safety* Field Guide for more information about these practices.

Slide 4-5: Safe Work Practice Alternatives to Prohibited Practices

- This overhead shows the safe work practices that can be used instead of traditional practices that are prohibited. All of these practices are for removing paint, one of the most dust-intensive work activities in renovation, remodeling, and rehabilitation.

- When presenting these practices, it is helpful to show the class examples of some of the tools used.

    - Chemical stripping. Chemical strippers can be dangerous-- for example, some caustic strippers cause burns. Methylene chloride is a suspected carcinogen. Citrus-based strippers are safer. Remind students of requirements in OSHA's Hazard Communication Standard for use of chemicals in a workplace including labeling and employee access to material safety data sheets (MSDS) sheets.

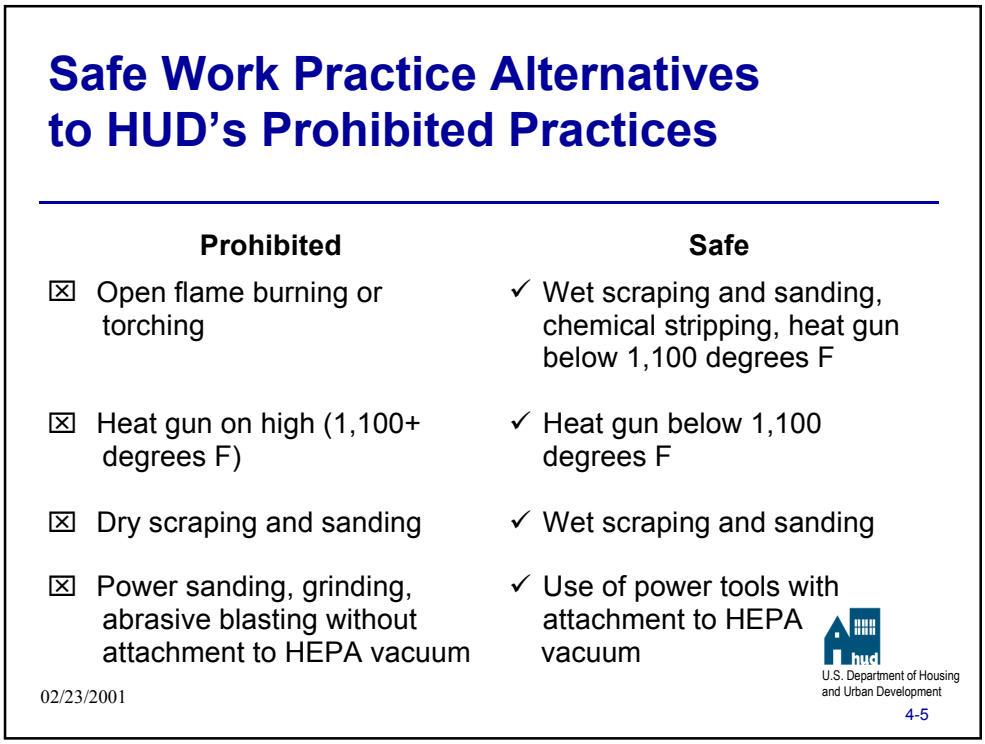
    - Wet sanding. Wet/dry sandpaper, sanding grit, and sanding blocks can be used with light misting.

    - Heat gun on low. Point out that the heat gun should be set to no more than 1,100°F. Note that newer heat guns don't go above 1,100°F.

    - Power tools with HEPA exhaust filter. These tools are attached to a HEPA vacuum by a hose. Later overheads in this module will cover using power tools with HEPA attachments.

- Note: HEPA stands for "high efficiency particulate air" filter. By definition, a HEPA filter capture 99.97% of particles that are 0.3 microns or larger in diameter.

- In practice, contractors will want to choose the safe work practices that work best for a particular job.



Alternative safe work practices for each prohibited practice

- For both large and small paint removal jobs, there are safe work practice alternatives.
- Some possible alternatives are listed on the slide.
- With experience, you will determine which safe work practices work best for different tasks.

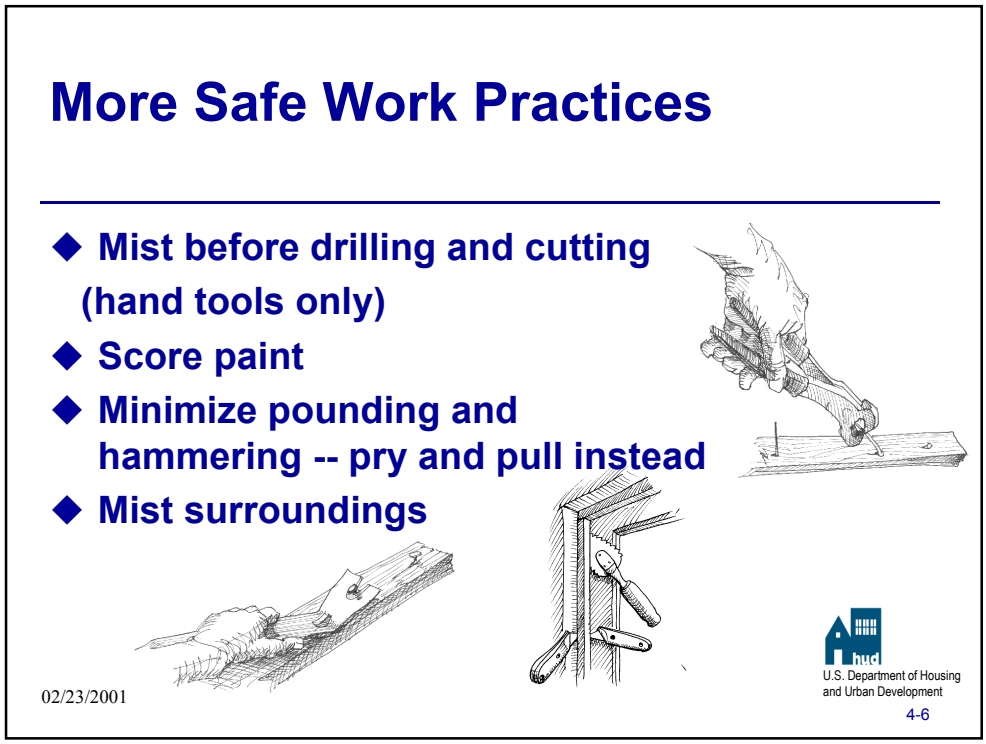
Note: HEPA (high efficiency particulate air) vacuums have HEPA-rated filters that stop 99.97% of particles of 0.3 microns or larger.

Also keep in mind

- Chemical strippers can be dangerous and should be used with great caution. Some can cause burns. Methylene chloride is suspected to cause cancer. Types of strippers range from citrus-based (safer) to more dangerous caustic strippers. Use of chemical strippers may trigger additional training, notification, and record keeping requirements under the OSHA Hazard Communication Standard. Follow the manufacturer's directions when using any chemical stripper.
- If building components to be stripped can be removed, such as doors, consider having them stripped off-site at a paint stripping facility.
- Half-face negative-pressure respirators do not provide sufficient breathing protection when using methylene chloride strippers.
- See pages 9-10 in the *Lead Paint Safety Field Guide* for more information.

Slide 4-6: More Safe Work Practices

- Beyond using safe work practices for paint removal, there are several other practices that contractors can use to control the spread of dust.
- As you present each of the practices on the overhead, the following props illustrate the practice.
    - Score paint. Hold up utility knife.
    - Minimize pounding, hammering. Hold up pry bar. Vise grips may be useful for pulling out nails. Use large vise grips for large nails.
    - Mist surroundings with water. Hold up mist bottle. A light misting, not soaking, is effective. (When employing wet methods, employees must be extremely careful to avoid electrical shock and electrocution hazards. Point out that using power tools on wet surfaces can be dangerous-- there is a risk of electric shock and blades can slip. Misting surfaces should be done only with hand tools. You also should not mist around electrical outlets.) HUD's Lead Safe Housing Rule requirements for wet methods contain an exemption for work within one foot of electrical outlets (see 24 CFR 35.140 (e)).
    - Mist before drilling and cutting. Worker lightly misting piece of painted trim before cutting with a handsaw.
- Students should use Ground Fault Circuit Interrupters (GFCIs).
- The use of spray foam is encouraged for dust control during drilling.



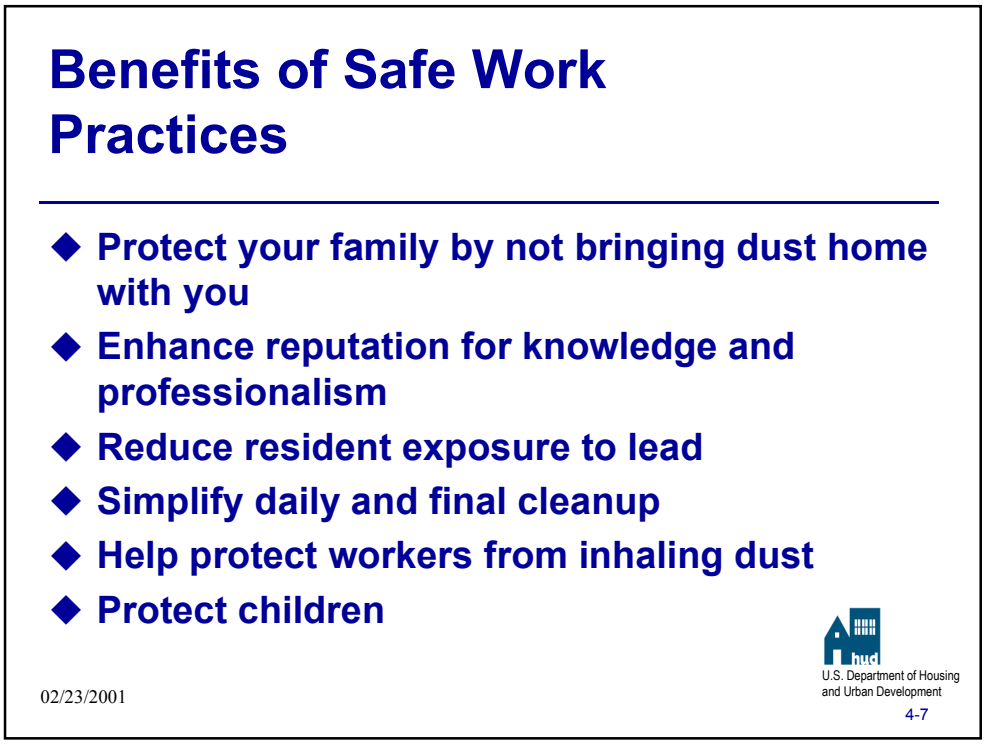
Additional safe work practices

- Mist before drilling and cutting to reduce dust creation and keep dust from becoming airborne and spreading beyond the work area.
- Scoring paint before separating components helps prevent paint from chipping when a paint seal is broken.
- Prying and pulling apart components and pulling nails instead of pounding create less dust and fewer paint chips. Vise grips may be useful when pulling nails.
- Frequent misting of surrounding surfaces with water helps keep dust and paint chips from becoming airborne when disturbed by work activity.
- When employing wet methods, employees must be extremely careful to avoid electrical shock and electrocution hazards.
- Using power tools on heavily misted surfaces can be dangerous. Tool blades can slip and water can cause electric shock. When misting, lightly mist the surface and use hand tools only. If power tools are to be used, they should be attached to a HEPA vacuum.
- Ground fault circuit interrupters (GFCIs) must be used when working around sources of electricity to prevent electric shock injuries. Use of water around **live** electrical outlets is prohibited.
- Consider use of foam (such as shaving cream) when cutting or drilling to reduce dust generation.
- HUD's Lead Safe Housing Rule contains an exemption for wet methods when working within one foot of an electrical outlet.

Slide 4-7: Benefits of Safe Work Practices

This slide introduces a series of seven work practices slides.

- This slide lists the advantages of safe work practices for workers and contractors.
- Review each of the reasons listed on the overhead.
- Emphasize that cleaning is easier if not much dust was generated in the first place.
- Passing clearance testing the first time is more likely.
- Because the EPA requires contractors to give their customers the lead information pamphlet, customers may have questions about how the work will be done. Contractors that rely on safe work practices will have an easier time explaining to their customers exactly how they will protect them from lead dust.



Advantages for contractors

- In addition to being safer for residents, safe work practices have advantages for contractors and workers.

By effectively using safe work practices, you can

- Foster your reputation as an informed and professional contractor who recognizes the risks of lead-based paint and takes steps to help ensure resident and worker safety.
- Gain a reputation for leaving the job site cleaner than when you arrived.
- Help your customers feel safe and reduce their anxiety about the risks of renovation, remodeling, and rehabilitation work.
- Have less dust and debris to clean up at the end of the job.
- Reduce risk of taking leaded dust home to your family.

Slide 4-8: Safe Work Practices Toolkit: Tools, Equipment, and Supplies

- These tools are necessary for most safe work practices. Later slides will explain how they are used, and give you a chance to show them to training participants.

Safe Work Practices Toolkit: Tools, Equipment, and Supplies

- Wet/dry sandpaper, sanding sponge (block)
- Mist bottle, pump sprayer
- Tape (painter's, duct, masking)
- Heavy duty plastic sheeting, such as 4-6 mil
- Chemical stripper
- Garbage bags and duct tape
- Utility knife
- Heat gun
- Vacuum with HEPA filter

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Safe work practices toolkit tools, equipment, and supplies

- There are some basic low-cost tools that you will need for safe work practices. Most of these tools and supplies are widely available from suppliers and home improvement stores.
- These tools are used to help reduce dust and for cleaning while working to keep dust under control.
- You will need several basic supplies to protect floor and ground surfaces, and bag, wrap, and clean dust as work is performed. If dust and debris are contained in plastic right after they are created, there is less chance that they will be spread beyond the work site.
- More toolkit supplies are listed on the next three pages of this manual.
- See pages 75-76 Tool and Supply List in the *Lead Paint Safety* Field Guide for more information.

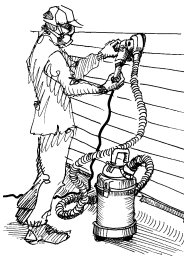
HEPA (high efficiency particulate air) filters are able to filter very small particles--to be considered a HEPA filter, it must be able to filter 99.97% of microscopic particles.

Slide 4-9: Safe Work Practices Toolkit: HEPA-Filtered Power Tools

- Because many contractors use power tools on the job, it is often not possible to mist surfaces with water. It is dangerous and can cause electric shock.
- When investing in power tools, contractors should consider power tools with HEPA exhaust filter attachments. It may also be possible to purchase attachments to fit their power tools.
- All of the tools listed here are used to remove paint from large surfaces.
    - Sanders, grinders, planers, and shavers are used on wooden surfaces.
    - A needle gun is used on brick, stone, and metal surfaces.
    - Power washing equipment can be used on many types of surfaces. The runoff from power washing needs to be collected and disposed of properly. (See the modules on set-up and disposal.)
- This investment will pay off in the long run because contractors can continue to work quickly and contain dust better with these attachments and HEPA exhaust filters. It may also be possible to rent these tools.
- Instruct students to use tools properly. Point out that these attachments do not entirely eliminate the dust created by the work, so the other precautions, especially during set-up, and use according to manufactures instructions are still important.

Safe Work Practices Toolkit: HEPA-Filtered Power Tools

- **Large jobs may require special tools**
  - Power sanders, grinders, planers, shavers with HEPA filter vacuum attachment
  - These tools increase productivity



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HEPA equipment for power tools

- Because wet methods are appropriate and practical only when using hand tools, adapters and HEPA vacuums are necessary for power tools.
- These tools use HEPA vacuums and adapters that help contain dust and debris as they are created. A shroud helps to contain the dust and paint chips as they are created. They are carried to a HEPA vacuum by a hose attached to the shroud. Use of these tools increases productivity.
- It may be possible to rent these tools, if you decide to not invest in them.
- Use tools in accordance with manufacturer's recommendations and lead safe work practices.

Power washing

- Power washing can be used if runoff is properly contained and disposed.

Set-up is still important

- Proper set-up and cleanup is still important because HEPA attachments do not eliminate the possibility that work will spread dust. Nonetheless, these attachments will reduce dust levels and thereby shorten cleaning time and lower costs.
- See pages 75-76 Tool and Supply List in the *Lead Paint Safety* Field Guide for more information.

Slide 4-10: Protect Yourself

- Workers should take precautions to protect themselves from dust hazards on the job.

  Note: These are minimum precautions. Employers must follow OSHA regulations that may require more extensive worker protection measures, especially for high dust jobs.

- As you talk about the specific worker protection precautions, refer to the following slide and to OSHA discussion in Module 1.

  - Worker protection. The minimum protective gear when necessary: painter's hat, disposable suit, and N100 disposable respirator. N100 is a NIOSH rating for respirators that can be used around lead. N100 means that the respirator has HEPA filtering capability. The disposable N100 respirator is acceptable for small jobs but under some work conditions, OSHA may require another types of respirators. When respirators are used, a written respiratory protection program must accompany them.

- Workers don't need to wear gloves but should wash their hands frequently, especially before eating, smoking, and leaving at the end of the day.

  - Supervisors can buy extra-large size disposable coveralls and re-size them with duct tape. Some coveralls also have hoods to keep dust out of hair. The coveralls can be used over again at the same job site but should be disposed of at the end of the job.

Protect Yourself

- **Workers should wear**
  - Painter's hat -- helps keep dust out of hair
  - Disposable or washable coveralls
    - Can be reused if not ripped
    - Launder separately
  - Disposable N-100-rated respirator (dusty jobs)
  - Gloves (during certain tasks, *i.e. High Dust Jobs*
- **Wash face and hands frequently**
  - Helps to reduce hand-to-mouth ingestion of lead dust
- **OSHA may require more protection**

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Workers should protect themselves

- **Minimum steps** that workers can take to protect themselves include:
  - **Painter's hats** are an inexpensive way to keep dust and paint chips out of workers' hair. Painter's hats can be easily disposed of at the end of the day or job.
- **Disposable coveralls** are a good way to keep dust off of workers clothes and reduce the chances for carrying dust to other areas of the residence as workers come and go. The coveralls can be removed when workers leave the work site and stored in a plastic bag overnight. To keep costs down, consider buying extra large size coveralls in bulk and sizing to fit workers with duct tape. Some coveralls have a hood to keep dust out of hair.
- **Respiratory protection.** Workers should wear respiratory protection, such as an N100 disposable respirator, to prevent them from breathing leaded dust.
- **Workers should wash** their hands and faces periodically to avoid ingesting leaded dust. It is especially important to wash well before eating, drinking or smoking and to not do any of these in the work site. Some of the dust that settles on the face around the mouth invariably finds its way into the mouth. Workers should also wash at the end of the day before getting in their car or going home. They can take leaded dust home to their families.
- OSHA rules require employers to take further steps to protect the health of workers on the job based on their exposure to lead. See slides on OSHA requirements.

Slide 4-11: Safe Work Practices Toolkit: Tools, Equipment, and Supplies

- These basic supplies for personal protection are necessary for most safe work practices. Later slides will explain how to use them.

- Disposable towels have many uses on the job-- to clean up small messes and dust, and for workers to use to wipe off dust before leaving the work site, and for washing before eating, drinking, or smoking while at work. (However, eating, drinking, smoking should not be done in the work site.)

- N100 disposable respirators provide an inexpensive protection. These masks are designed for lead work. (Masks rated as N95 are not sufficient.) These masks are made with HEPA-rated material and look somewhat like a dust mask, are inexpensive, and easy to find in home improvement stores. Employers are responsible for following OSHA's regulations for worker safety, especially during high dusty jobs that may require a more protective type of respirator. A respirator program is also needed.

- The illustration on the right is of an N100 disposable respirator. If respirators are used, they must be used according to OSHA requirements.

Safe Work Practices Toolkit: Tools, Equipment, and Supplies

- Disposable hand towels
- Pre-moistened disposable wipes
- Painter's hats
- Gloves
- Coveralls
- Disposable booties
- N-100-rated disposable respirators where appropriate

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Safe work practices toolkit tools, supplies and equipment for personal protection

- Disposable hand towels (such as paper towels) and pre-moistened wipes have multiple uses on the job. They can be used to quickly clean surfaces and by workers to wipe dust before leaving the work site and washing before eating, smoking, or drinking.
- "N100" is a NIOSH rating for respirators. Respirators with an N100 (or HEPA) rating are approved for use when working on lead-based paint surfaces. OSHA requires different types of respirator rated for use around lead if exposures are high.
- All of the items on this list are readily available at hardware and home improvement stores. N100 disposable respirators cost approximately $6-7.
- See pages 75-76 Tool and Supply List in the *Lead Paint Safety Field Guide* for more information.

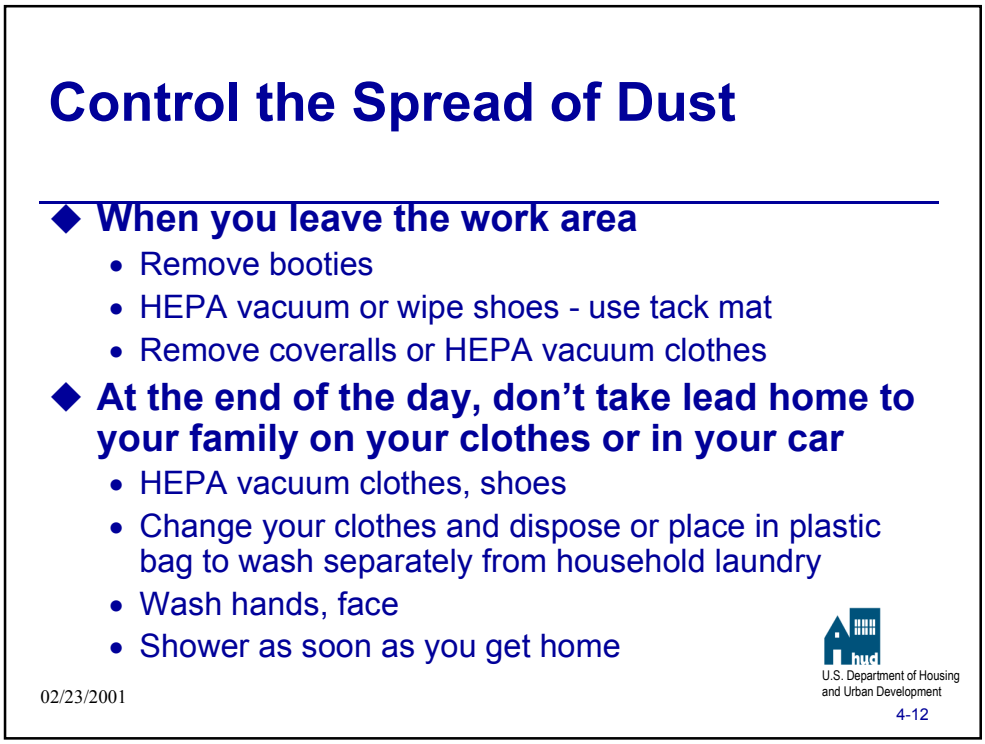
Slide 4-12: Control the Spread of Dust

- This overhead presents some other steps that workers should take to control the spread of dust from the work site.

- Dust can be spread when workers leave the work site to get tools, carry away debris, take a break, leave at the end of the day, etc. The boundaries of the work site depend on the containment area. For example, it may be the area covered by protective sheeting or an entire room.

- Workers can carry dust outside the work area on their shoes and clothes. They should always wipe the tops and bottoms of their shoes and vacuum their clothes before stepping off of the protective sheeting.

- Workers should take extra precautions when cleaning before leaving for home because they can carry dust home to their families on their clothes, in their hair, on their bodies, and in their car. Studies have been conducted that measure the blood lead levels of worker families. These studies confirm that leaded dust carried home from work sites does poison the children of workers.



Precautions to take when leaving the work site

- When you leave the work site (the area covered by protective sheeting or the room), take precautions to prevent spreading dust and paint chips to other parts of the residence on your clothes and shoes.
- Every time you leave the work site, wipe or vacuum your shoes before you step off of the plastic sheeting. A large tack pad on the floor can help to clean the soles of your shoes. Remove booties if you are using them.
- At the end of the day, change your clothes and wash yourself to reduce the risk of contaminating your car and taking leaded dust home to your family.
- Before leaving the worksite-- remove any protective clothing, HEPA vacuum (no shop vas) dust from non-protective clothing, and thoroughly wash your hands and face. Throw away disposable clothing or place clothing in a plastic bag to stop dust from getting on other clothes at home.
- At home-- as soon as you arrive at home, take a shower and be sure to thoroughly wash your hair, especially before playing with children. Wash work clothes separately from regular household laundry to stop lead particles from getting on your other clothes.

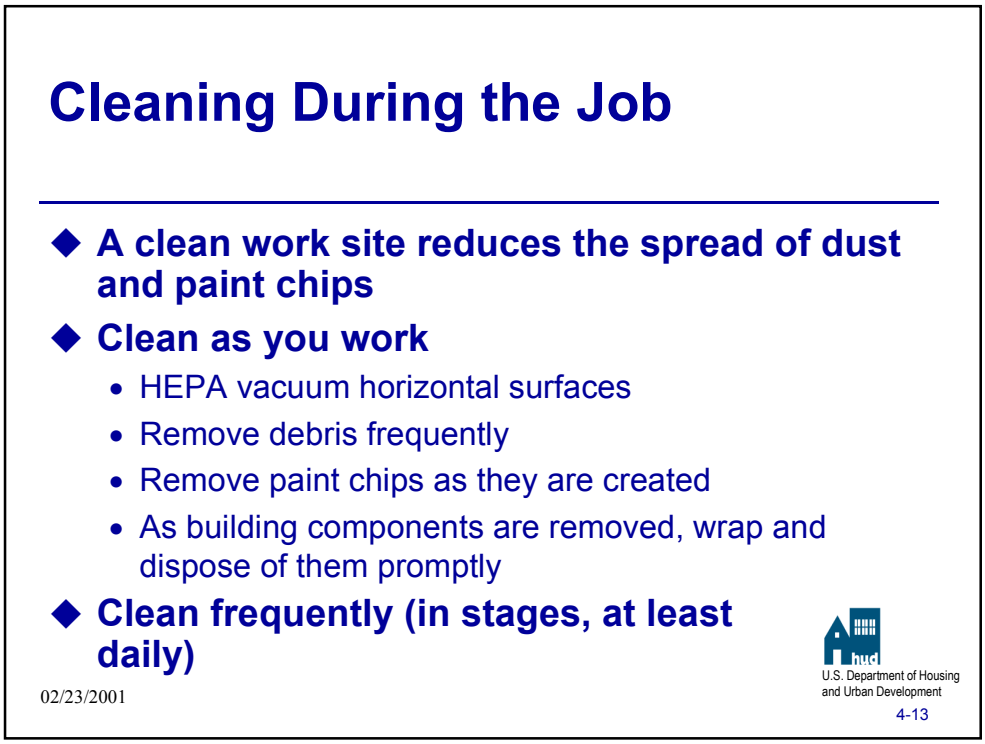
Slide 4-13: Cleaning During the Job

- By nature, renovation, remodeling, and rehabilitation jobs create debris that can pile up in the work site. Debris should be removed periodically to keep it from being a source of dust that can be easily spread by work activity and coming and going from the work site. Show the following slides to illustrate examples of debris that generates dust:

    - Paint chips. Paint chips are easily tracked to other parts of the residence. It is important to wipe off shoes before stepping off of protective sheeting.

- Cleaning to keep debris and dust under control can be done in stages but should be done at least daily.

- "Shop-vacs" are not allowed.



Clean the work site frequently

- Cleaning the work site frequently as the job progresses will reduce the spread of dust and paint chips. The cleaning need not be as thorough as the final cleanup. It should, however, keep debris, dust, and paint chips from piling up and spreading beyond the immediate work site.

Cleanup during the job includes

- **Removing debris frequently.** During demolition jobs, seal and dispose of construction debris as it is created.
- **Vacuuming horizontal surfaces frequently.** HEPA vacuum dust and paint chips that settle on surfaces, including protective sheeting. As workers come and go during the work day, this debris is easily spread. Periodic cleaning throughout the work day will help to minimize workers tracking dust. **DO NOT USE NON-HEPA FILTERED VACUUMS OR DRY SWEEPING FOR CLEANUP.**
- **Collect paint chips as they are created.** When removing paint, piles of paint chips can also spread outside the immediate work area as workers come and go from the work site. To keep paint chips from spreading beyond the work site, make sure that they are collected as they are created. Also, periodically HEPA vacuum or wet sweep and dispose of paint chips.
- **Wrapping and disposing of removed components.** When removing painted components such as windows, trim, and cabinets, wrap them in plastic sheeting and dispose of them in stages. This will prevent the spread of debris and keep residents, especially children, from coming into contact with leaded dust created by work.
- **How often should cleaning during the job take place?** The goal is to keep dust and debris under control, not to maintain a completely spotless site at all times. Every job is different, so clean when it makes sense to without hindering progress. Remove large amounts of dust, paint chips, and debris frequently, at least daily.

Module 4 Instructor Notes

Slide 4-14: Exercises

- These exercises are structured class discussion.
- The exercise materials on the next several pages include instructor notes and a student version of the exercise.

Exercise

- **Objective - Exercise A**
  - Evaluate a scenario
  - Plan Activities
- **Objective - Exercise B**
  - Evaluate a scenario
  - Identify potential activities that create dust
  - Identify steps you can take to minimize dust, and
  - Talk to clients about the potential lead dangers from the work
- **Use checklist**

MODULE 4 EXERCISE 4A
Instructor Notes

This exercise is an instructor-lead discussion where participants determine approaches to work tasks using safe work practices. The discussion should lead to an exchange of ideas among the participants on safe approaches to typical jobs.

Instructor's Notes

This exercise is a class discussion. The instructor's job is to present the directions, encourage discussion, manage the responses, write down the participants' ideas, and contribute to the discussion.

Step 1. Explain the instructions to the class: Give them 5 minutes to read the scenario and the jobs described after.

Step 2. The remaining 20 minutes allotted for the exercise is devoted to the participants' suggestion for safe approaches to each job. Starting with the first job, ask the participants for their ideas on how to do the job. Ask them for specific steps, the tools they will need, and what the job should look like when done.

Step 3. As the participants make their suggestions, jot them down on a clear overhead sheet or flip chart for everyone to see and keep track of what has been covered.

Step 4. After getting a complete description, you should move on to the next job. You should spend about 5 minutes on each before moving onto the next.

MODULE 4 EXERCISE 4A

Objective: Identify safe work practices for typical renovation, remodeling, and rehabilitation tasks.

Length: Total time: 25 minutes

Directions: Take 5 minutes to read the background and the jobs below. When you are finished, the instructor will ask you and the other students to contribute approaches to each of the jobs listed below. You may take notes on approaches under each description.

Background:

You have been asked to plan renovation work on a Victorian style home built around 1910. You are looking forward to doing a lead-safe, high quality job and getting a good reference. This represents at least three solid weeks of work for your workers. To be safe, you have advised the owners that you assume some layers of paint are lead-based paint. You reassure them that you will take steps to reduce the risk of creating a lead hazard.

Addressing Lead-Based Paint Hazards During Renovation, Remodeling, and Rehabilitation in Federally Owned and Assisted Housing

Module 4

The Jobs

How will you approach each of the following jobs in a lead safe way?

1. Remove worn green carpet from vestibule, first floor hallway, and staircase. The carpet is tacked to the floor and its edges are covered with quarter round at all of the walls. The carpet is being removed to expose hardwood flooring which is to be refinished.

   Mist and pry loose baseboard covering edges of carpet; dispose of by immediately wrapping in protective sheeting and carry out of the work site. Lightly mist carpet with pump sprayer to keep dust down but not to add weight to the carpet. Pull up edges of the carpet and roll to one side, carpet side up. Wrap in protective sheeting, seal with duct tape, and carry away from the work site for disposal. Vacuum dust on the bare floor with a HEPA vacuum before beginning refinishing of the floor. Tools used include pry bars, vice grips, misting bottles and pump sprayer, and HEPA vacuum.

2. Enlarge the door size opening in the wall between the living and dining rooms to make way for an enlarged passageway. There is trim at the base of the walls and trim at the top and sides of the opening. As much of the trim as possible should be saved to be reused on the enlarged opening. The new opening will be as tall as before but wider.

   Set up the work area as described in the module on set up: put down protective sheeting, seal doorways, etc. Lightly mist trim surfaces and pry loose with pry bar and hammer. Remove nails by pulling with the hammer claws or vice grips. Remove trim from the work area for paint removal at the exterior of the residence.

   When all of the trim has been removed, lightly mist sections of wall if demolishing with a sledgehammer. Do not mist if using a saw to cut through the wall. Dispose of debris as it is created by wrapping in protective sheeting, sealing with duct tape, and carrying away from the work site.

   After demolition, HEPA vacuum the work site, remove protective sheeting, and HEPA vacuum the surfaces covered by protective sheeting.

3. Remove the old painted wooden cabinets in the kitchen. These built-in cabinets line two walls in the kitchen. The walls will be repainted and new cabinets installed.

   Set up the work area as described in the module on set up: put down protective sheeting, seal doorways, etc. Remove cabinet doors and wrap in protective sheeting and carry away from the work area. Mist cabinets and pry loose from walls. Wrap in protective sheeting and carry away from the work site.

   After the cabinets are removed, wet scrape and sand any rough areas on the wall in preparation for installation of new cabinets and repainting.

   When work is done, HEPA vacuum area, remove protective sheeting, and HEPA vacuum all surfaces.

4. Remove sections of deteriorated siding and peeling paint from the east exterior wall of the house. Water has leaked behind the siding causing large sections to deteriorate. There are two large patches of peeling paint where the siding is still solid. New clapboard siding will be installed later and the entire exterior repainted by a painting contractor.

   Set up exterior work area according to set up procedures in module on set up. Remove deteriorated siding by lightly misting and prying loose siding from the structure. Immediately wrap removed siding in protective sheeting and carry away from the work site. Lightly mist, scrape, and sand areas of deteriorated paint. When done, remove protective sheeting and dispose of debris. NOTE: Safe work practices should also be used when installing new sections of siding.

MODULE 4 EXERCISE 4A

Objective: Identify safe work practices for typical renovation, remodeling, and rehabilitation tasks.

Length: Total time: 25 minutes

Directions: Take 5 minutes to read the background and the jobs below. When you are finished, the instructor will ask you and the other students to contribute approaches to each of the jobs listed below. You may take notes on approaches under each description.

Background:

You have been asked to plan renovation work on a Victorian style home built around 1910. You are looking forward to doing a lead-safe, high quality job and getting a good reference. This represents at least three solid weeks of work for your workers. To be safe, you have advised the owners that you assume some layers of paint are lead-based paint. You reassure them that you will take steps to reduce the risk of creating a lead hazard.

The Jobs

How will you approach each of the following jobs in a lead safe way?

1. Remove worn green carpet from vestibule, first floor hallway, and staircase. The carpet is tacked to the floor and its edges are covered with quarter round at all of the walls. The carpet is being removed to expose hardwood flooring which is to be refinished.

2. Enlarge the door size opening in the wall between the living and dining rooms to make way for an enlarged passageway. There is trim at the base of the walls and trim at the top and sides of the opening. As much of the trim as possible should be saved to be reused on the enlarged opening. The new opening will be as tall as before but wider.

MODULE 4 EXERCISE 4A

3. Remove the old painted wooden cabinets in the kitchen. These built-in cabinets line two walls in the kitchen. The walls will be repainted and new cabinets installed.

4. Remove sections of deteriorated siding and peeling paint from the east exterior wall of the house. Water has leaked behind the siding causing large sections to deteriorate. There are two large patches of peeling paint where the siding is still solid. New clapboard siding will be installed later and the entire exterior repainted by a painting contractor.

MODULE 4 EXERCISE 4B
Instructor Notes

Objective: The objective of this exercise is fourfold:

- To evaluate a project's potential to create lead dust and plan your work to minimize the creation and dispersion of this dust.
- To familiarize you with the worksheets included in this module and use them to evaluate a potential scenario.
- To discuss ways to talk to clients about lead safe work practices and ensure they are informed about the dangers of lead dust.
- To ensure you understand your requirements related to disseminating information related to lead-based paint.

Length: 35 Minutes - 20 minutes in small groups and 15 minutes discussion

Directions:

1. Introduce the exercise objectives and describe the scenario.
2. Split class into groups of three to five students, depending on the size of the class.
3. Give each group a copy of the worksheet on a transparency. Have the groups complete the worksheet on the transparency.
4. Tell class they have 15 minutes to read the scenario and answer the questions within their groups.
    - Give 5-minute and 1-minute warnings.
    - Circulate around the room to ensure that students understand their roles.
5. When the 15 minutes are up, tell groups to wrap up their individual discussions. Go through the answers as a whole, asking various students to share their responses and give the reasoning behind their thinking.

Debriefing Procedure

- Take 15 minutes for debriefing and discussion.
- Ask if any of the groups had difficulties using the worksheet or answering the questions.
- Review the specific questions

Addressing Lead-Based Paint Hazards During Renovation, Remodeling, and Rehabilitation in Federally Owned and Assisted Housing

Module 4 Instructor Notes

Using the Worksheet

Using the transparency worksheets completed by the groups, review the first three exercise questions. Place the worksheets on an overhead projector and have the group share their responses and provide reasons for their answers. Ask if any other groups disagree or came up with additional information that should also be addressed. The questions and potential responses are listed below.

1. Was the property constructed prior to 1978 and do you have to utilize lead safe work practices?

The property was constructed in 1950 and the residents have no knowledge of any major renovation work or testing for lead-based paint. Therefore, you must assume that lead-based paint is present.

2. Is this a high dust job? If yes, what work activities in this job are likely to create high dust levels? What special precautions should you take to minimize the hazards associated with high levels of lead dust?

There is no formal definition for a "high dust" job, therefore supervisors and workers will have to use their experience and judgment to decide if high dust precautions are necessary on a job-specific basis.

Activities such as tearing out cabinets and flooring; demolishing a wall in the kitchen; and removing flooring and cabinet in the bathroom all have the potential to be high dust jobs.

3. How would you schedule the work? When would you perform lead safe work practices in relation to the other renovation, remodeling, and rehabilitation work? Why?

There are no right or wrong answers to this question. What is important is for workers to understand the implications of their actions. Some workers may choose to perform all lead safe activities at the beginning of the job and simultaneously rehabilitate the kitchen and bathroom. This could create difficulties if the residents return and want to use the house. It also increases the potential for individuals to track lead dust from one work area to another as they walk through the house. However, it could also reduce the amount of time needed to perform lead safe work practices.

Other individuals may decide to work in one room at a time, performing lead safe work practices at the beginning of that project. This would help to contain the lead dust and make it easier for the homeowner if they returned to the house. However, if a firm uses specialized equipment and employees to perform lead safe work, performing this work at two separate times could increase the duration and cost of a job.

4. How did you develop your cost and labor estimates? Will any special tools or equipment be needed for this job?

   With respect to developing cost and labor estimates, there is no right or wrong answer. Have students describe the additional materials and time needed to implement lead safe work practices. Highlight work methods and supplies that can save time and expenses.

   With respect to needing special tools or equipment for this job, power tools and vacuums with HEPA filter attachments are likely to be necessary. For the work in the kitchen and bathroom, these areas should be closed-off with plastic sheeting to prevent the spread of dust and debris to other areas of the home.

Talking to residents:

5. What topics, related to lead dust and lead safe work practices, should you highlight when discussing the job with the residents? Where could you refer the residents if they ask for additional information?

   Review the pamphlet, "Protect Your Family From Lead in Your Home." At the end of the pamphlet are sources for additional information. These include:

   - *The National Lead Information Center 1-800-424-LEAD*
   - *State and local health departments*
   - *State environmental agencies*
   - *Pamphlet entitled: "Reducing Lead Hazards When Remodeling Your Home"*
   - *Pamphlet entitled: "Lead in Your Home: A Parent's Reference Guide"*
   - *EPA and HUD internet sites:* www.epa.gov/lead *or* www.hud.gov/offices/lead

6. After discussing the potential lead dust hazards and the associated lead safe work practices with the residents, they insist that these actions are not necessary because the house does not contain any lead-based paint. How do you respond?

   One possible response is to explain that homes built before 1978 (and especially homes built in the 1950's) may contain lead-based paint and that, in the absence of certified test results showing that the home is free of lead-based paint, responsible contractors must assume that it is present. In addition, you may want to stress the practical benefits of the work practices that you plan to use. For example, note these work practices will also help to prevent all dust and dirt from spreading to non-work areas of the home. This will make clean up easier and faster, and help protect the rest of the home.

Wrap Up:

If time permits, ask students what will be the hardest topic to discuss with residents. Ask for suggestions of ways to talk about these topics with residents.

MODULE 4 EXERCISE 4B

Objectives: The objective of this exercise is fourfold:

- To evaluate a project's potential to create lead dust and plan your work to minimize the creation and dispersion of this dust.
- To familiarize you with the worksheets included in this module and use them to evaluate a potential scenario.
- To discuss ways to talk to clients about lead safe work practices and ensure they are informed about the dangers of lead dust.
- To ensure you understand your requirements related to disseminating information related to lead-based paint.

Length: Total Time: 35 minutes - 20 minutes working in groups and 15 minutes discussion

Directions: The following exercise presents a scenario that may be similar to situations routinely encountered by you or your company. In groups of three to five (depending on class size), take the next 20 minutes to read over the scenario and answer the questions on the next two pages. Before answering the questions, however, complete the attached worksheet. If you need to make assumptions in order to complete the questions or the worksheet, please be sure to write down your assumptions and include them in your worksheet and answers.

Background

New property owners have contracted with your company to perform major remodeling work throughout a house constructed in the 1950's. On the main floor, the work consists of remodeling the kitchen (existing dimensions are 12' x 15') and adding a new 15' x 15' sunroom off of the kitchen. This remodeling work includes tearing out existing cabinets, flooring, and a painted wall. Upstairs, the residents have asked you to renovate the half-bath by removing the existing linoleum flooring and sink (porcelain sink attached to the wall with plumbing beneath exposed) and then laying new floor tiles and installing a new sink and cabinet unit. To the best of the residents' knowledge, no major renovation, remodeling and rehabilitation work has been done on the house since it was constructed and the former residents never mentioned lead-based paint.

Although the house is currently vacant, the new owners are planning on moving into the house in the very near future. It is highly likely that they will move in before all of the renovation work has been completed. The new owners are a couple in their early thirties with two children under the age of six, and two pet cats that are kept indoors.

MODULE 4 EXERCISE 4B

Complete the attached worksheet based on the information provided in the scenario. After completing the worksheet, answer the following questions. At the end of the exercise, you may be asked to share your answers with the class. Be prepared to explain your answers.

1. Was the property constructed prior to 1978 and do you have to utilize lead safe work practices?

2. Is this a high dust job? If yes, what work activities in this job are likely to create high dust levels? What special precautions should you take to minimize the hazards associated with high levels of lead dust?

3. How would you schedule the work? When would you perform lead safe work practices in relation to the other renovation, remodeling, and rehabilitation work? Why?

MODULE 4 EXERCISE 4B

4. How did you develop your cost and labor estimates? Will any special tools or equipment be needed for this job?

The following questions pertain to talking to the residents.

5. What topics, related to lead dust and lead safe work practices, should you highlight when discussing the job with the residents? Where could you refer the residents if they ask for additional information?

6. After discussing the potential lead dust hazards and the associated lead safe work practices with the residents, they insist that these actions are not necessary because the house does not contain any lead-based paint. How do you respond?

WORKSHEET: EVALUATING THE JOB

1. Was the property constructed prior to 1978? Or, if the work area is limited to an addition, was the addition constructed prior to 1978?	Yes_____ No_____
✓ If no, you are <u>not</u> required to perform lead safe work practices.	Yes_____ No_____
✓ Do you have documentation that the work area has been designed as lead-free by a certified inspector or risk assessor?	Yes_____ No_____
2. Will this work disturb painted surfaces or otherwise create or disturb dust that may contain lead?	
✓ Is this a high dust job? If yes, you must take added precautions.	Yes_____ No_____
3. How will the lead activities affect my job?	Set up _____hours
✓ How much additional time will lead-safe work practices take? See calculation aid on back.	Work _____hours
✓ How much will these practices cost? See checklist of tools and materials on back	Cleanup _____hours
	Labor $_____
4. What activities should the residents perform before I begin my lead-safe work practices?	Supplies $_____
✓ Examples include removing draperies, small furniture, and other fixtures from the work area.	Talk to the resident about specific activities

5. Other job related notes

_____

_____

CHECKLIST: MATERIALS AND SUPPLIES

Set up and Basic Tools

- ❑ Protective clothing, coveralls
- ❑ Disposable shoe covers
- ❑ N100 Dust Mask
- ❑ Painter's hats
- ❑ Paint scraper
- ❑ Duct or masking tape
- ❑ 4-6 mm polyethylene sheeting
- ❑ Utility knife
- ❑ Rope or other barrier
- ❑ Misting bottle
- ❑ Chemical stripper (avoid methylene chloride)
- ❑ Window opening tool
- ❑ Plane
- ❑ Heat gun
- ❑ Disposable hand towels

Specialized Tools - HEPA Filters

- ❑ Needle gun with HEPA exhaust
- ❑ HEPA exhaust attachments for power tools (sanders, grinders, planers, shavers)
- ❑ Power washing equipment

Clean up Supplies

- ❑ Two-sided bucket
- ❑ 3-4 disposable mop heads and mop handle
- ❑ HEPA filtered vacuum
- ❑ Misting bottle
- ❑ General or lead-specific Cleaning solution
- ❑ Disposable hand towels
- ❑ Heavy-duty garbage bags
- ❑ Duct-tape
- ❑ Shovel and rake

Module 4

Hours and Cost Calculation

	Set up	Work	Clean up	Total
Labor Hours (total)				
Labor Cost (total)	**$**	**$**	**$**	**$**
Supplies	**$**	**$**	**$**	**$**
Total	**$**	**$**	**$**	**$**

RESOURCES FOR ADDITIONAL INFORMATION

Where can I get copies of the *Protect Your Family From Lead in You Home* pamphlet?

Download electronic copies at: www.epa.gov/lead

- ✓ Use camera-ready copies from the National Lead Information Center to reproduce the pamphlet, providing that you reproduce the text and graphics in full: 1-(800) 424-LEAD (5323).

- ✓ Order bulk copies from the Government Printing Office (GPO) that cost $26.00 for a package of 50 pamphlets: (202) 512-1800; refer to the pamphlet by name or by GPO Stock Number 055-000-00507-9.

Where can I get copies of *The Lead-Based Paint Pre-Renovation Education Rule* handbook?

Download electronic copies of the interim edition (June 1999) in PDF format at http://www.epa.gov/opptintr/lead/interior2.pdf

- ✓ Contact the National Lead Information Center at: 1-(800) 424-LEAD (5323)

Where can I find additional information and resources related to lead-based paint?

- ✓ National Lead Information Center: 1-800-424-LEAD (5323)

- ✓ EPA's Office of Pollution Prevention and Toxics (OPPT): www.epa.gov/lead, 202-260-3810

- ✓ HUD's Office of Healthy Homes and Lead Hazard Control: www.hud.gov/offices/lead; by phone at 202-755-1785, ext. 104.

Module 4 Instructor Notes

Slide 4-15: Summary

Ask the participants to tell you what the safe work practices are. As you hear them, list them on the blank overhead.

Possible responses are:

- Using power tools with HEPA attachments
- Wet sanding and scraping
- Cleaning up frequently while the work is in progress
- Using non-hazardous chemical stripper (without methylene chloride)
- Scoring before prying
- Off-site stripping
- Heat gun on low setting
- Minimizing pounding

Summary

- **Class discussion**
  - List key safe work practices and equipment

Module 5

Addressing Lead-Based Paint Hazards During Renovation, Remodeling, and Rehabilitation in Federally Owned and Assisted Housing

Module 5 Instructor Notes

Slide 5-1: Module 5 Clean-up and Check Your Work

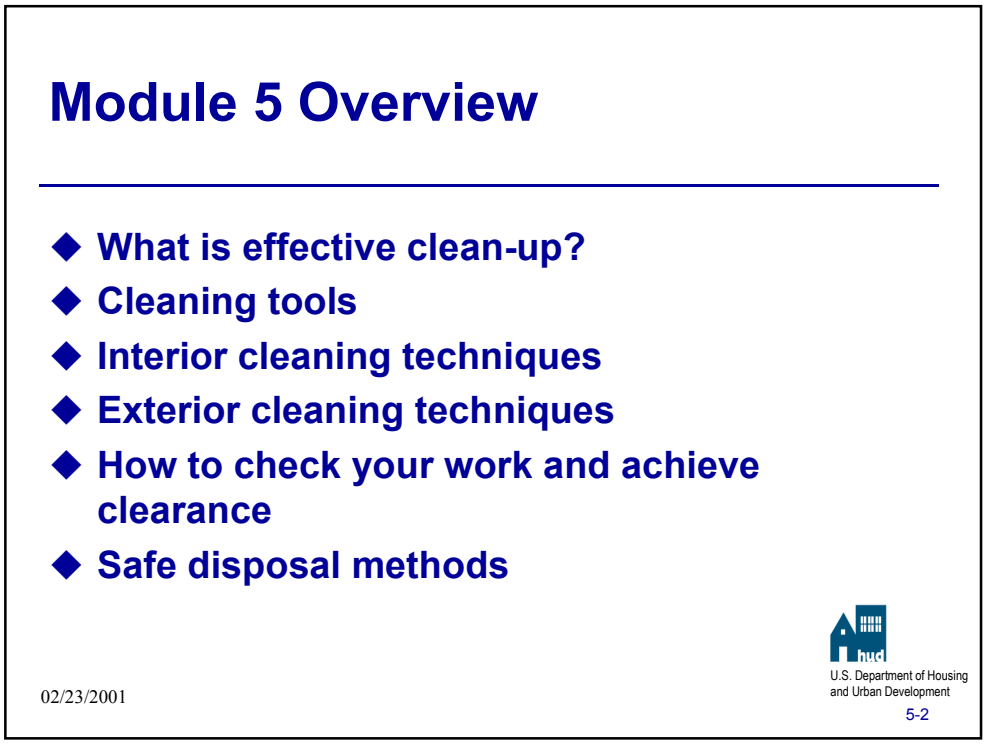
- This is the module title slide.

Module 5
Clean-Up and Check Your Work

U.S. Department of Housing and Urban Development

Slide 5-2 : Module 5 Overview

- In this section participants will learn:
    - What an effective clean-up includes
    - What tools to always keep in your truck and at the work site
    - Effective techniques used to clean-up after both interior and exterior jobs
    - Safe disposal methods
    - How to check your work
- Effective clean-up includes using specific techniques and following the proper order when cleaning. This module focuses on how to clean to reach visual clearance. Visual clearance means that an area has been cleaned to the point that no dust, debris or paint chips can be seen with the naked eye. Achieving visual clearance is the goal of every clean-up.
- **Remember**, because lead dust can be invisible visual clearance does not guarantee that you will pass a dust sample test.



What you will learn in this module

In this module, we will cover all the topics listed on the slide above.

- The goal of cleanup is to leave the work area as clean or cleaner than when you arrived so that, as a result of your work, lead dust is not left behind to poison the residents of the home.
- At the end of this module, you will know how to check your work to ensure the work area is clean enough to pass a clearance examination. See Appendix 2 for a discussion of HUD requirements, which include clearance examination.
- By using the techniques described in the following pages of this module you will be able to clean a work area quickly and efficiently. Remember, approaching a clean-up is similar to approaching a job. Proper preparation and planning will help make your cleaning efforts more effective and faster.
- Always schedule time at the end of each day to clean thoroughly.

Addressing Lead-Based Paint Hazards During Renovation, Remodeling, and Rehabilitation in Federally Owned and Assisted Housing

Module 5 Instructor Notes

Slide 5-3: What is Effective Clean-Up?

- Discuss the similarities of clean up and approaching a job. Explain that, just as you approach a job with planning, set-up and containment, you must approach cleaning by first having effective containment, then carefully following specific procedures to best clean the work area. The techniques outlined in this section should make your clean-up faster, more efficient and effective.

- **Remember:**
  - Always achieve visual clearance.
  - Proper disposal and checking your work are essential to the process of cleaning.
  - The most effective cleaning will follow this sequence:

    1. **Pick up** all visible paint chips and debris.
    2. **Clean and dispose** of protective sheeting.
    3. Slowly **HEPA vacuum** the work area, working from high to low.
    4. Thoroughly **wet clean**, working from high to low.
    5. **If necessary repeat** HEPA vacuuming or wet cleaning.
    6. **Visually inspect** your work.
    7. **Bag** all waste in heavy duty plastic bags (such as 4-6 mil poly-bags), "gooseneck" **seal** and **dispose** according to Federal, state and local regulations.

- **Demonstrate how to "gooseneck seal" a poly-bag and note that this will again be covered in the disposal section.**

- Discuss why this clean up sequence should work well.

  - **Picking up all visible debris and paint chips** prepares a work area for the first HEPA vacuum.

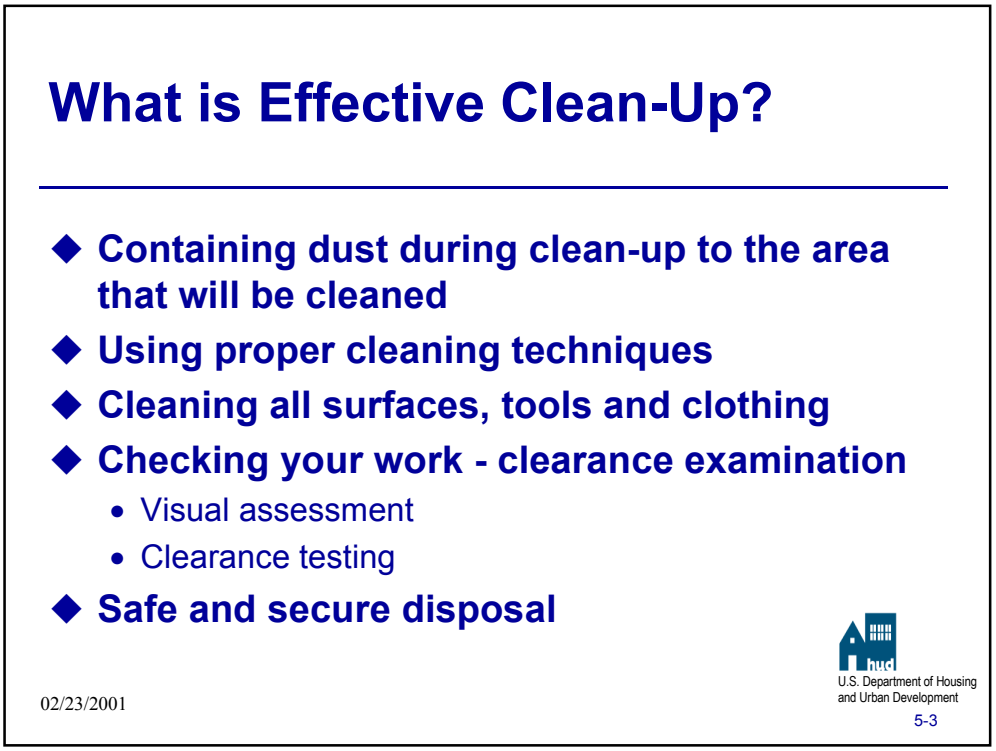
  - **Clean and dispose of protective sheeting.** This step should come before HEPA vacuuming in order to collect any dust that may escape from the protective sheeting.

  - **HEPA vacuum the area from high to low.** This first HEPA vacuum will collect dust and debris not visible to the naked eye.

  - **Wet cleaning** the area will further dislodge any lead contaminated dust or debris not collected by the first HEPA vacuum. Wet cleaning also gets dust and debris that is "stuck" to surfaces.

  - **If necessary, a final pass with the HEPA vacuum or wet clean** will capture any remaining dust or debris left after the wet cleaning.

  - The last step should be to **check your work** and make sure that visual clearance is achieved and all waste is bagged, sealed and disposed of in accordance with federal, state and local laws. The individual performing dust testing must be independent from those doing the work. Check State requirements for acceptability of "sampling technicians" performing this activity. Remind students that HUD's Lead Safe Housing Rule for all renovation, remodeling, and rehabilitation activities above the de minimis levels requires clearance testing.



Containment

- Effective cleaning begins with proper preparation and containment. Clean-up will be much easier and efficient if proper containment has kept all dust and debris confined to the work area. Also, containing dust to the area that is being cleaned is important.

Proper cleaning techniques

- You should be careful not to spread dust and contaminate other areas while cleaning. Using the techniques outlined in this module and following the proper sequence will help ensure that you do not contaminate other areas while cleaning.

Cleaning all surfaces

- "All surfaces" includes vertical surfaces such as walls and windows and horizontal surfaces such as floors, door tops, window troughs, and windowsills. Cleaning should proceed from high to low, i.e., from top of wall to window to floor.

Checking your work

- Always conduct a visual inspection after any job. Look for any visible paint chips, dust or debris.
- A trained individual (sampling/clearance technician, LBP inspector or risk assessor) who did not do the work will perform the clearance examination. Check state requirements for acceptability of "sampling technicians" performing this activity.

Safe and secure disposal

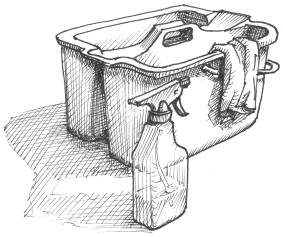
- Bag and "gooseneck seal" all waste in heavy duty plastic bags such as 4-6 mil poly-bags. Safely dispose of all waste in accordance with state and federal regulations.

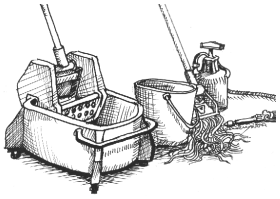
Module 5 Instructor Notes

Slide 5-4 : Clean-Up Toolkit

- Here is a list of cleaning tools that you should always keep in your truck.
    - Be sure to change mop heads when necessary. You do not want to be mopping and cleaning with a dirty, used mop head as this could spread dust into other areas.
    - You need either a two-sided bucket or two single buckets to keep your wash and rinse water separate. Discuss use of ringer mop and bucket.
    - Heavy duty plastic bags such as 4-6 mil poly bags.
- Ask participants if anyone uses tools that are not included in the list? If so, what are they and how are they commonly used?

Clean-Up Toolkit





- Vacuum with HEPA filter
- Misting bottle and pump sprayer
- Mop with disposable heads
- Detergent
- Two buckets or two-sided bucket
- Disposable hand towels
- Heavy duty garbage bags
- Duct tape
- Shovel and rake

02/23/2001

U.S. Department of Housing and Urban Development

5-4

Clean-Up Toolkit

- The tools listed on the slide above are for cleaning interior and exterior jobs. Some tools, such as the pump sprayer, shovel, and rake are used primarily for exterior clean-up. Other tools, such as the buckets and mops are used primarily for interior clean-up.
- The following pages discuss clean-up for both interior and exterior situations.
- These items supplement the Job Set-Up (slide 3-6) and Safe Work Practices (slide 4-8) Toolkits.

Slide 5-5: Interior Clean-up Techniques

- **Ask:** Why should you clean-up paint chips and other debris before picking up the protective sheeting? Why should you mist down the protective sheeting before picking it up?

  [Answer to both questions: to prevent accidental spreading of lead-contaminated paint chips and dust off of the protective sheeting]

- After the first visual inspection of the work area, cleaning, folding and disposing of the protective sheeting is the next step. Clean your protective sheeting with a HEPA vacuum. Once cleaned, fold and seal the sheeting and dispose with the rest of your waste. When you pick up and fold the protective sheeting be careful not to spread any dust that may remain on the sheeting.

- This process is followed by the HEPA vacuuming and wet cleaning (discussed on next slide) in order to get any dust that escaped the protective sheeting.

- Following the end of work (when clean-up is finished) there is a one hour waiting time before clearance testing can be performed.

- Note: Laboratories may have standard turn-around times ranging between one to two days. If you need a faster turn-around time, you need to communicate this to your EPA recognized Laboratory for scheduling purposes. Be aware that this may affect your schedule.

Pick up

- Always begin a cleanup by picking up all paint chips and any visible debris with a wet disposable clothe.

Protective sheeting

- Protective sheeting may be used again within the same work area if it has not already been folded (see pp. 47, Lead Paint Safety Field Guide). When the job is complete, clean protective sheeting using a HEPA vacuum. Protective sheeting should then be folded and taped shut. Always fold dirty side inwards, seal and place in heavy-duty plastic bags such as 4-6 mil poly-bag. “Gooseneck-seal” the poly-bag and dispose with the rest of your waste at the end of the job.

Slide 5-6: Interior Clean-up Techniques

- Clean-up must be done everyday.
- Clearance testing will be performed after final clean-up at the end of job.
- Emphasize that workers should always clean at least two feet beyond the work area.
- Also, discuss **why** clean-up should always proceed from high to low.
    - [Answer: Cleaning from high to low is more efficient and effective because any dust or debris dislodge will fall down to the floor. Just as one would clean steps working from the top down, cleaning a work area should work from high to low to "push" all dust not collected down to the floor, which should be cleaned last.]
- These cleaning techniques and this sequence ensure that visual clearance will be achieved. While there is no guarantee that you will pass a dust sample analysis, this process is highly effective in cleaning a work area and if followed, significantly decreases the risk of not passing a dust sample analysis. This will be discussed in greater detail later in the module.

Interior Clean-Up Techniques

- **HEPA Vac work area from high to low**
  - **Start with walls, tops of doors, window troughs**
  - **HEPA Vac at least two feet beyond contained area**
- **Wet clean from high to low**
  - **Change cloths and rinse water often**
  - **Clean the floor last**
- **Clearance testing at end of job**

U.S. Department of Housing and Urban Development

5-6

HEPA vacuum the <u>contained</u> work area from high to low

- Start with the walls, tops of doors, and window troughs (high) and work your way down to the floor (low).
- Clean walls with a HEPA vacuum or by lightly wiping with a damp disposable cloth.
- **Be thorough-don't rush.**

When cleaning wet, you can either mist the surface with cleaning solution or use a wet disposable cloth

- Work from high surfaces to low. If a surface is very dirty use a moist paper towel before beginning to scrub with a wet cloth.
- Replace cloths and change rinse water often.

Clean the floor last

- Work toward door
- Mist floor and clean with a wet mop using cleaning solution and the two-sided bucket.
- Clean at least two feet beyond contained area.
- Then, repeat the process using a new mop head and clean water.
- Remember, always keep one side of the bucket for cleaning solution and the other side for rinsing and wringing out the cloth or mop-head. Change the rinsing water often.

It may be necessary to repeat the HEPA Vacuum and Wet Clean. <u>Always</u> clean to clearance.

Slide 5-7: Interior Checking Your Work

- Always conduct a visual inspection after your clean up is completed. If you find any dust or debris, make another pass with the HEPA vacuum and, if necessary, wet clean again. You should continue these steps until visual clearance is achieved.

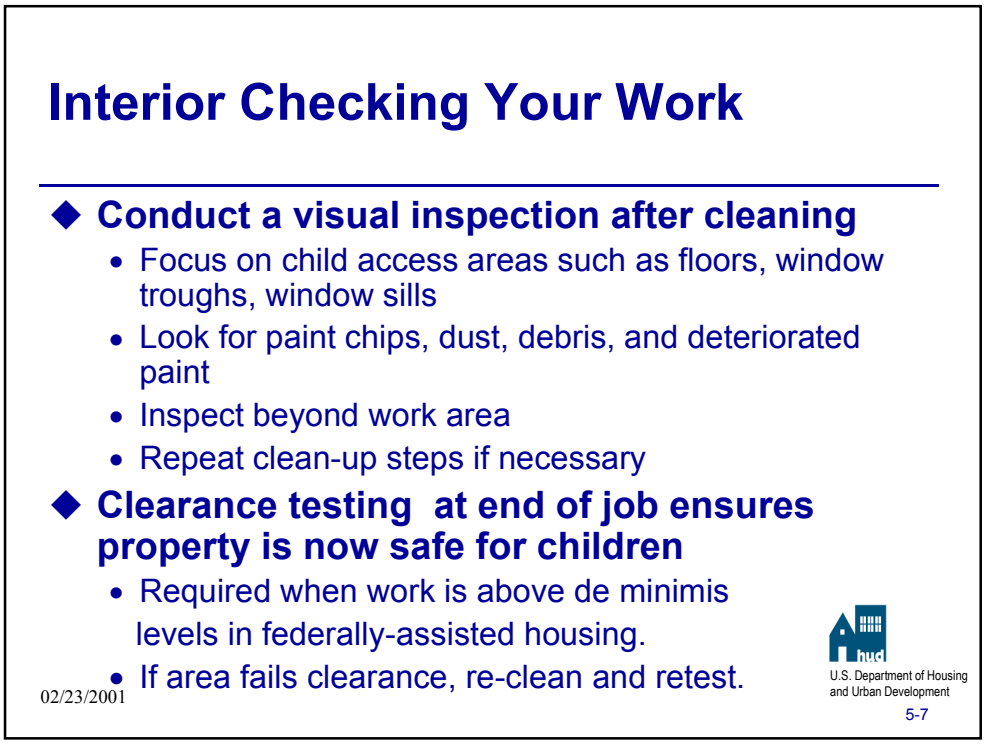
- Discuss instances where dust sampling may be required or requested such as:

    - Work on pre-1978 federally assisted housing (This will be discussed in detail on slide 5-11).

    - In some states, dust wipe sampling by a certified or trained person may be required by law. Supervisors should be aware of laws regarding dust wipe sampling and renovation, remodeling, and rehabilitation work.

    - In some instances the owner may request dust wipe samples be taken to locate lead hazards and ensure cleaning has been effective. If you follow the techniques outlined in this section you should pass any dust wipe analysis.

- **Emphasize that clean up should always be performed as if a dust wipe analysis were going to be conducted after clean-up.**



Clearance Testing has two parts:

Visual inspection (HUD refers to this as "visual assessment")

- A thorough visual inspection should be the first step of checking your clean-up. Any visible paint chips, dust or debris should be collected and disposed.
- **Visual inspection will not verify that a work area has been cleaned adequately**. In many instances lead dust is not visible to the naked eye and will be not be detected during a visual inspection. To ensure that a work area is properly cleaned, follow the practices outlined in this section and take dust wipe samples using a qualified person to conduct clearance.

Dust sampling

- Dust sampling can be performed to check the effectiveness of the clean-up efforts.
- In some cases, such as with federally assisted work or under some state and local laws, dust sampling may be required as part of "clearance" (a defined process to ensure that a work area is not contaminated with lead dust after work is completed). In such cases, a certified or trained person must perform dust sampling. Supervisors should be aware of state laws regarding renovation, remodeling, and rehabilitation work and clearance testing.

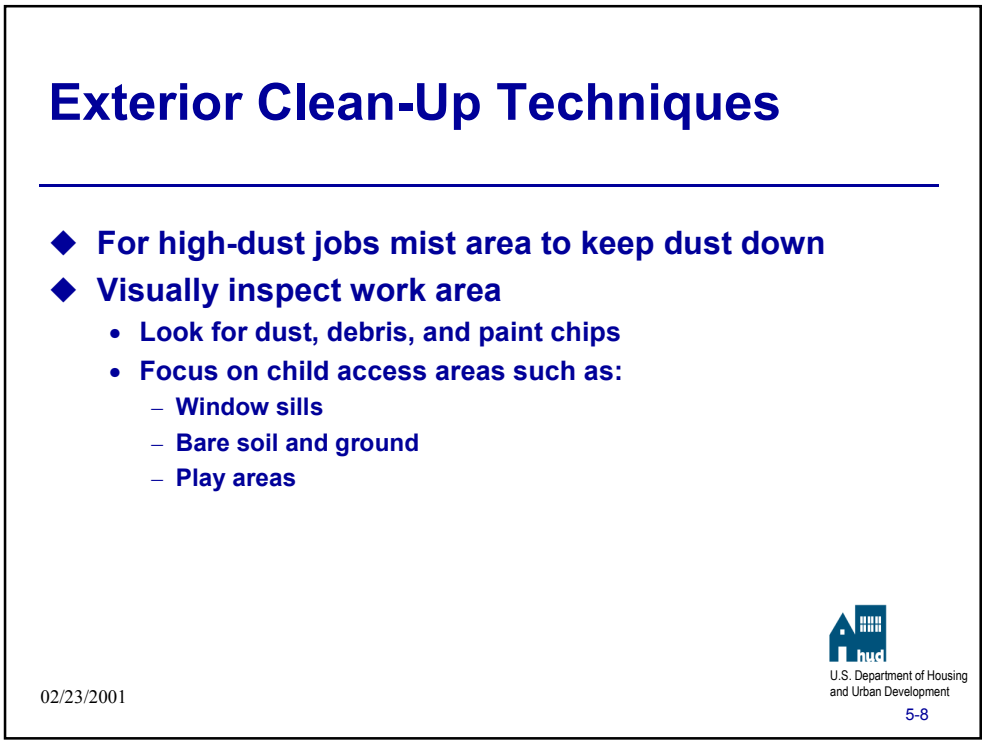
The de minimis levels are:

- 20 square feet on exterior surfaces
- 2 square feet in any one interior room or space
- 10 percent of the total surface area on an interior or exterior type of component with a small surface area

Slide 5-8: Exterior Clean-up Techniques

- The main point of cleaning after an exterior job is not to let dust spread beyond the work area and to focus specifically on the areas that children could have access to such as bare soil, play areas, exterior porches and exterior window sills.

- Always inspect beyond the work area. Collect and dispose of all paint chips, dust and debris.



High-dust jobs

- After completing a high-dust job, such as power sanding a painted surface, mist the entire work area to keep dust from spreading.

Visual inspection

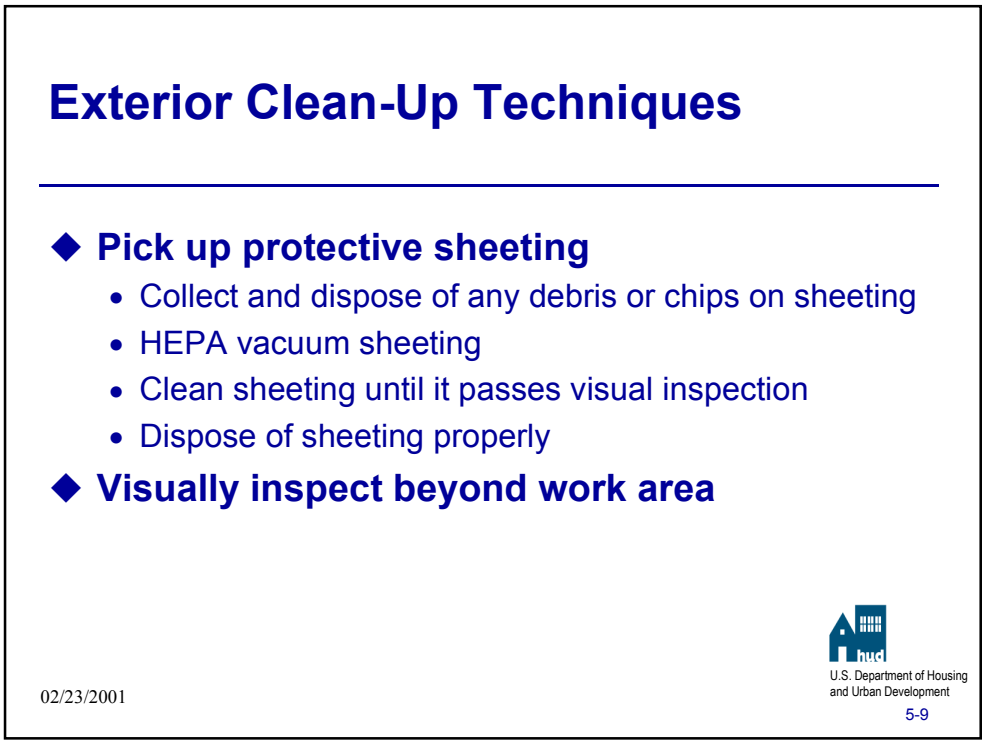
- A thorough visual inspection of the work area should be conducted after any exterior job. Any visible paint chips, wood chips or other debris from the work area should be collected and disposed with the rest of your waste.
- Focus your visual inspection on areas where children may play or be exposed to lead contaminated dust or debris. Such areas include exterior porches, outside play areas, bare soil and ground, and windowsills.

Remember

- Lead contaminated soil can poison children.
- Avoid dry raking and spreading dust.

Slide 5-9: Exterior Clean-up Techniques

- Plastic protective sheeting can kill plants and other vegetation if used for an extended period of time.



Protective sheeting

- If protective sheeting or landscape fabric will be disposed at the end of the job, it should be cleaned and disposed with the rest of your waste.

Specific exterior jobs

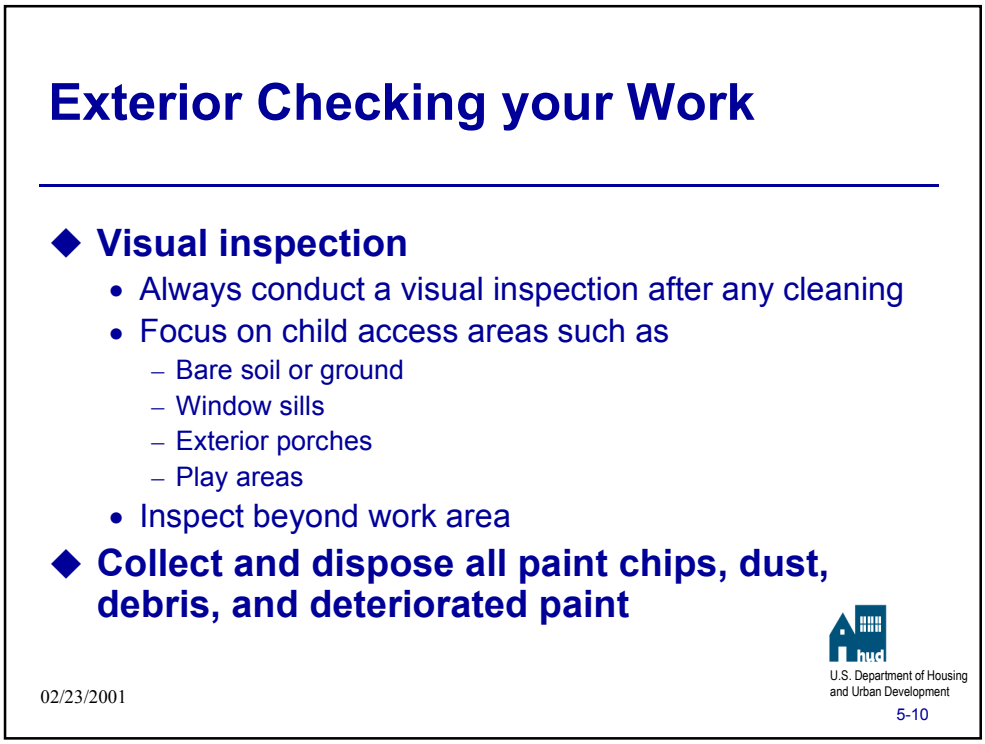
- If work takes place on an exterior porch or stairwell, HEPA vacuuming, wet cleaning and mopping, in addition to a thorough visual inspection, should be used to clean the work area. For such jobs the clean-up can be similar to clean-up after interior jobs. Collect and dispose of any dust or debris with the rest of your waste.

Slide 5-10: Exterior Checking Your Work

- Discuss why another visual inspection for checking your work is necessary.

- Discussion: A visual inspection should always occur before cleaning and focus on collecting all visible debris, large components, and paint ships. This should be followed by your cleaning activities, which, in the case of exterior work, consists mainly of visual clearance and inspection. However, after any cleanup activity another visual inspection is always necessary and should include areas not covered by the protective sheeting, areas outside the containment area, and all areas in the work area.

- Emphasize that contractors should focus on child access areas such as bare soil or ground, exterior porches, and exterior window sills.



Checking your work

- A thorough visual inspection is the main part of checking your clean-up after an exterior job. You should collect and dispose of any visible paint chips, wood chips and debris found during the visual inspection. Child access areas include porches, play areas, bare soil or ground, and window sills.
- You may notice that the processes of cleanup and checking your work are similar for exterior jobs. A visual inspection is conducted once while cleaning and **again** after completing cleanup to check your work. Both visual inspections should be thorough and focus on collecting and disposing all visible paint chips, dust and debris.

Slide 5-11: HUD Requirements in Federally Assisted Housing

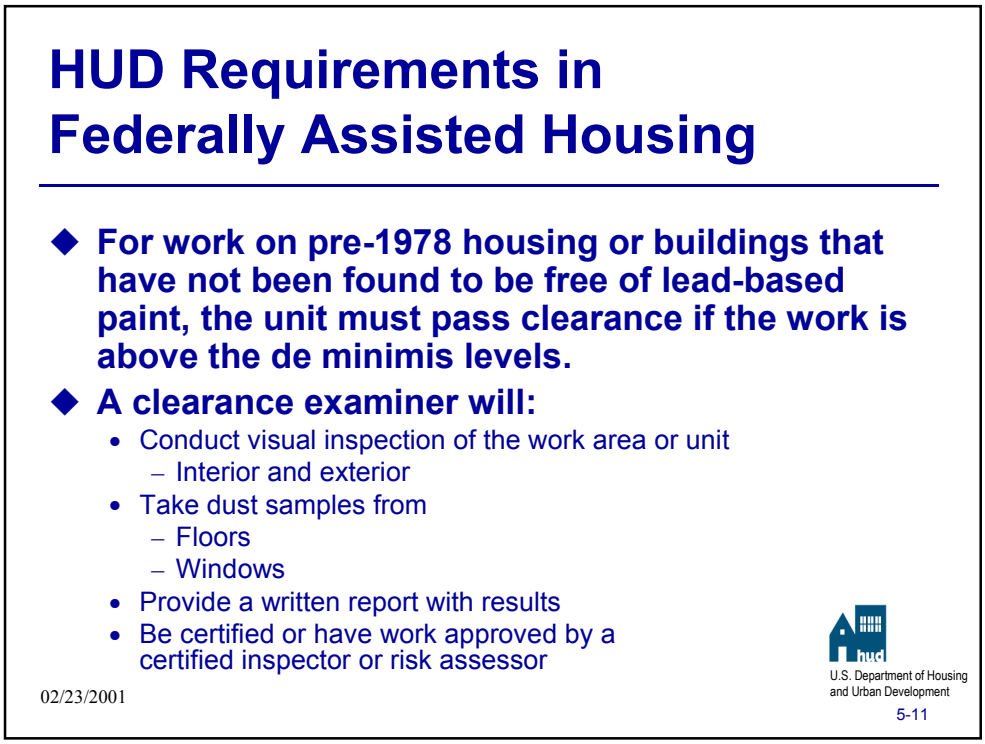
- If you are working on a pre-1978 building that is receiving or has received HUD funding, dust sampling is required. A certified clearance examiner will take samples from window sills, window troughs, and the floor. The samples are random, i.e., they could be taken from any one of these places in different work areas and several samples can be taken depending on the size and scope of the work area.

- Most likely you will be given a report before your work begins. This report will explain where lead-based paint may be in the house or building and list recommendations on how to proceed with your work. The samples will be sent to an EPA-recognized lab and in most cases, no reoccupation will be allowed until the lab results have been received indicating there are no lead hazards.

- **If you follow the practices outlined in this course you should be able to pass these clearance tests.**

- If the area fails clearance, you must re-clean and retest.

- See Appendix 2 for more information about HUD requirements for homes receiving federal funding.



Clearance

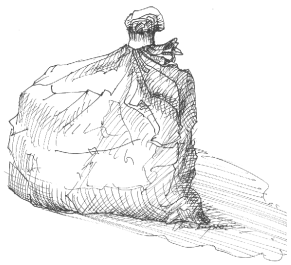
- Clearance is required in pre-1978 housing that has received HUD assistance and has not been found to be free of lead-based paint by an EPA or State certified risk assessor or inspector. In these cases, clearance must be conducted by an independent, certified clearance examiner or a trained technician. This person may be called a "sampling technician" or "clearance technician." Certified inspectors or risk assessors may also perform clearance examinations. Individual state requirements may vary, therefore, check state requirements to determine who may perform clearance testing.
- Clearance involves
  - A visual inspection to identify remaining deteriorated paint, dust, debris, and paint chips.
  - Dust sampling on floors and windows.
  - A written report with the results of the clearance examination.
- A unit or property that does not pass clearance must be re-cleaned and go through clearance again.
- The HUD rule is summarized in Appendix 2.

Slide 5-12: Disposal

- Demonstrate “gooseneck” seal of disposal bags.
- Waste should be stored in a secured area.
- Discuss methods to handle wastewater.
- Wastewater produced during the job from mopping, wet cleaning or misting should not be poured down the sink, in the yard, down a storm drain or in a tub.
- Wastewater should be poured down the toilet if local regulations allow for such disposal. Before disposal, wastewater should be filtered.
- Always be aware of federal, state and local regulations regarding wastewater disposal.
- All waste should be handled carefully and sealed in heavy duty plastic bags such as 4-6 mil poly bags.
- Supervisors must be aware of the components of the waste produced at the job site and the proper method of disposal. Again, always be aware of federal, state and local waste disposal regulations.

Disposal

- **What should I do with my waste?**
- **At the work site**
  - **Place waste in heavy duty plastic bags such as 4-6 mil poly-bag**
  - **"Gooseneck Seal" the bag with duct tape**
  - **Carefully dispose of waste in accordance with state and federal regulations**
  - **Store waste in secure area.**



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At the work site

- Always collect, bag and seal your waste at the work site and in the work area. Do not carry your waste to another room or another area before bagging and sealing the waste. Store all waste in a secure container or dumpster until disposal. Limit on-site storage time. Avoid transporting waste in an open truck. Some examples of waste include:
  - Protective sheeting
  - HEPA filters
  - All paint chips, dust and dirty water
  - Used cloths, wipes and mop heads
  - Any debris
  - Protective clothing, respirators, gloves
  - Architectural components

Wastewater

- Water used for cleanup should be filtered and dumped in a toilet. Never dump this water down a sink, storm drain, on the ground, or in a tub. **Always be aware of state and local regulations regarding wastewater disposal.**

Remember

- If needed, "double-bag" your waste to help prevent the waste from escaping if the bag is cut or ripped.

Slide 5-13: Disposal - Local and Federal Information

- Waste disposal is regulated under the Resource Conservation and Recovery Act (RCRA) and various associated state laws and regulations.

- Some waste generated from lead work may meet the definition of "hazardous waste" because of its toxicity, corrosivity, etc. Therefore it is important for contractors to segregate waste into categories that are likely to be hazardous and non-hazardous. Examples of hazardous waste may include: paint chips, vacuum debris, sludge or chemical waste from stripper and HEPA filters.

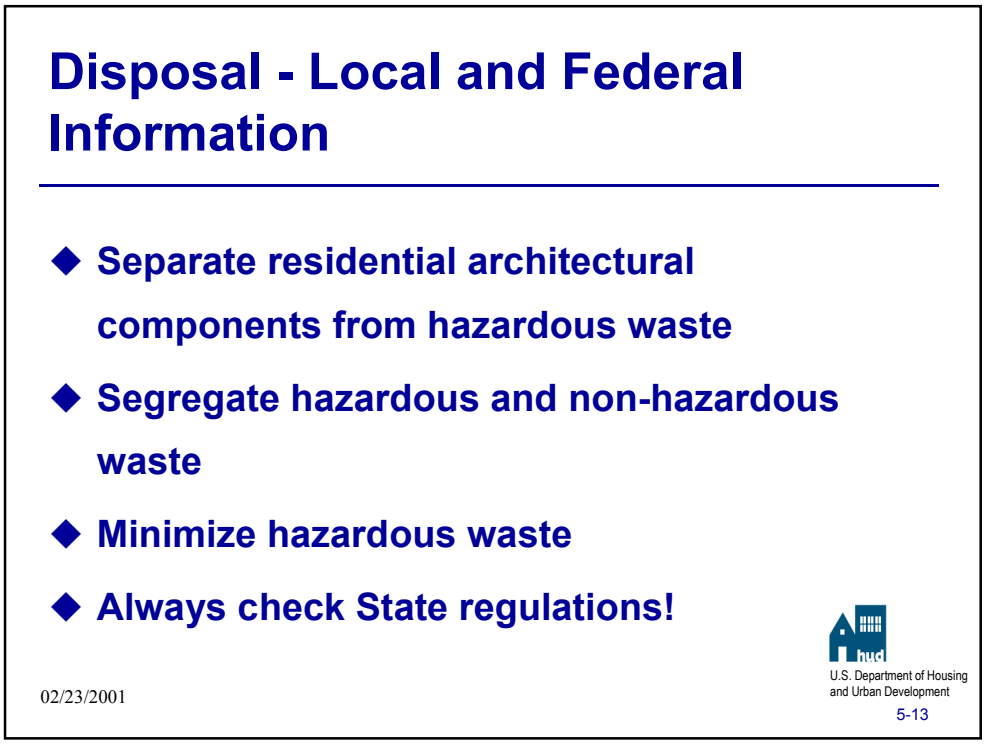
- Generators of less than 220 pounds of waste per job site per month are exempt from Federal waste disposal regulations and most State regulations.

- Many states have more stringent regulations than federal requirements. It is, therefore, important for contractors to understand their obligations under these laws and regulations.

- You should always be aware of how much waste you are generating per job site per month.

- EPA's website has a list of telephone numbers for state information on solid and hazardous waste disposal at http://www.epa.gov/epaoswer/hotline/states.txt

- EPA considers renovation and remodeling as "routine residential maintenance;" and allows waste to be taken to a solid waste landfill. In a memorandum to RCRA Senior Policy Advisors and EPA Regions 1-10, dated July 31, 2000, EPA's Office of Solid Waste stated that lead-based paint waste from households may be disposed of as household garbage subject to applicable state regulations. Some states may continue to regulate lead-based paint waste as potentially hazardous if generated in large enough quantities as indicated on the slide. (U.S. EPA "Regulatory Status of Work Generated by Contractors and Residents from Lead-based Paint Activities Conducted in Households" Memorandum from Elizabeth A. Cotsworth, Director, Office of Solid Waste, to RCRA Senior Policy Advisors and EPA Regions 1-10. July 31, 2000) See Appendix 9.



Waste disposal issues

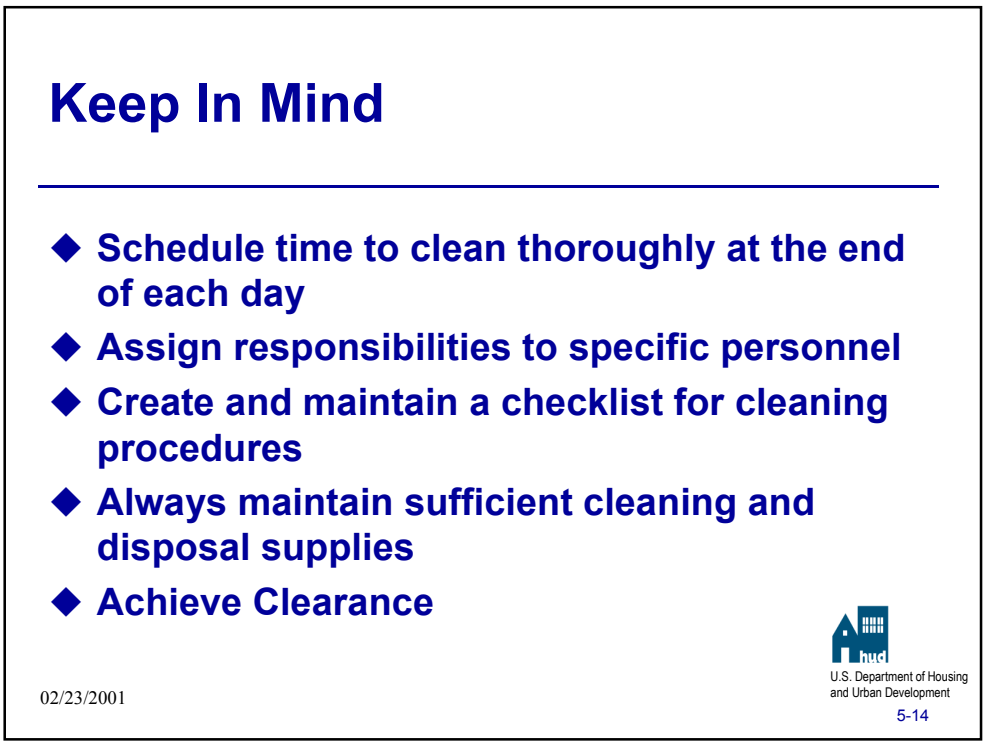
- You should determine whether you generate more than 220 pounds of hazardous waste per job site per month. If you have less than 220 pounds per location per month then manage this waste as solid, non-hazardous waste. If you generate more than 220 pounds of hazardous waste you should contact your state and local regulators to find out how to dispose of this waste properly.
- Some **possible** examples of **hazardous waste** may include: paint chips; vacuum debris; sludge or chemical waste from strippers; and HEPA filters.
- Some **possible** examples of **non-hazardous waste** may include: disposable clothing; respirator filters; rugs and carpets; protective sheeting; and solid components with no peeling paint. Please list and suggest any other examples.
- All waste should be handled carefully and sealed in heavy duty plastic bags such as 4-6 mil poly-bags.
- Large architectural components from residential housing should be wrapped and sealed in plastic sheeting and disposed along with your waste.

Remember

- Some states have enacted more stringent waste management and disposal regulations.
- Supervisors must be aware of state regulations concerning hazardous and solid waste management and disposal.

Slide 5-14: Keep in Mind

- The items listed on the slide are important for planning and managing work efficiently.
- Remember, you should either clean the work site thoroughly at the end of each day or completely seal off the area and not allow re-occupation.
- Note the checklist for cleaning procedures in the student notes below the slide. **Ask participants whether they would add or change anything in the checklist.**



Example checklist for cleaning procedures

The list below is an example checklist for cleaning procedures. You may wish to add to or modify it to fit your needs.

- Was the work completed?
- Have all visible paint chips, dust and debris been removed and disposed?
- Was the protective sheeting folded, sealed, and disposed?
- Was the interior work area HEPA vacuumed?
- Were all surfaces wet cleaned? Was the floor cleaned last?
- Was the interior work area HEPA vacuumed again?
- Was all waste placed safely in heavy-duty plastic bags such as 4-6 mil poly-bags?
- Were all bags properly sealed?
- Was all waste disposed in accordance with state and federal regulations?
- Was a visual inspection completed?
- Were dust samples taken?
- Is the property owner satisfied?